

Research Interests

Computational Social Science	Data Mining	Applied ML and Deep Learning
Applied NLP and Deep Learning	Representation Learning	Conversational AI

Education

M.Sc. in Computer Engineering, University of Tehran (2021 – 2024)
GPA: 17.29/20
Thesis: *Retweet Prediction using Graph Neural Networks and Representation Learning*
Supervisor: Dr. Masoud Asadpour

B.Sc. in Electrical Engineering, Amirkabir University of Technology (2016 – 2021)
Last 2 years GPA: 17.1/20
Supervisor: Dr. Mohammad Bagher Menhaj

Work and Research Experience

Software Engineer, OptiGrid Pty Ltd, Australia (Jan 2024 – Present)
Developed a reliable API for providing real-time electricity price forecasts to customers in the Australian energy sector. Built optimal data pipelines to seamlessly fetch and process real-time market data from the AEMO public database. Established a reliable infrastructure for running machine learning models with high up-time and low latency.

Co-Founder, ML/AI Engineer, SofiaMind Chatbot, Iran (Sep 2023 – Present)
Co-founded sofiaMind, an intelligent chatbot platform utilizing LLMs to automatically answer customer queries. Integrated state-of-the-art natural language understanding techniques to deliver accurate, context-aware, and real-time responses.

Research Assistant, Health Sciences Research, Columbia University, USA (Jan 2024 – Present)
Mentor: Dr. Maryam Zolnoori
Focused on developing pipelines leveraging LLMs for clinical decision support as a diagnostic tool. Designed methodologies to optimize LLM integration for real-time clinical applications.

Research Assistant, Nottingham Trent University, UK (Feb 2024 – Present)
Mentors: David Brown, Mufti Mahmud, Alexander Sumich, Nadja Heym
Conducted a systematic review of deep learning approaches on EEG for the early detection of Alzheimer's Disease and Mild Cognitive Impairment (MCI).

Research Assistant, Social Network Laboratory, University of Tehran, Iran (Oct 2021 – Sep 2024)
Developed a deep learning model for interaction prediction on Twitter (X) using structural embeddings from the follower graph and textual embeddings from user tweets.

Research Assistant, Computational Intelligence Lab, Amirkabir University, Iran (Jan 2021 – Sep 2021)
Implemented various Reinforcement Learning techniques to solve differential games, developing a graphical application showcasing two adversarial agents engaged in a real-time pursuit-and-evasion scenario.

Member of Executive Committee, Innovation Center of Amirkabir University, Iran (Mar 2019 – Dec 2020)

Software Engineer, Freelancer (Jan 2021 – Sep 2023)
Built and maintained the server-side infrastructure for multiple services and games using the Django Framework

Research and Development Intern, LuxinTech, Iran (Aug 2019 – Sep 2019)
Developed a program for controlling the surrounding and main lights of the house with low latency.

Publications

- **Deep Learning Approaches in EEG Analysis for Early Detection of Alzheimer's Disease and Mild Cognitive Impairment: A Mini Systematic Review**
Authors: Tahoura Morovati, Hamed Vaezi*, Sepehr Karimi*, Mufti Mahmud, Mark Crook-Rumsey, Nadja Heym, David J Brown, Alex Sumich*
Published in: International Conference on Applied Intelligence and Informatics. (Accepted)
* Authors contributed to the manuscript equally.

- **Enhancing Alzheimer's Detection with Reasoning-Augmented In-Context Learning**
Authors: *Sepehr Karimi, MohammadJavad momeni, Dr. Maryam Zolnoori*
Published in: Under preparation
- **User Engagement Prediction on Online Social Media: Leveraging Graph Neural Networks for User Interactions on X**
Authors: *Sepehr Karimi, Dr. Masoud Asadpour*
Published in: Under preparation

Teaching Experience

- Statistical Inference, Spring, Fall 2024, University of Tehran Instructor: Dr. M. A. Dehaqani
- Natural Language Processing, Spring 2024, University of Tehran, Instructor: Dr. Heshaam Faili
- Deep Neural Networks, Spring 2024, University of Tehran, Instructor: Dr. Ahmad Kalhor
- Social Networks, Spring 2024, University of Tehran, Instructor: Dr. Masoud Asadpour
- Advanced Algorithms, University of Tehran, Instructor: Dr. Heshaam Faili

Selected Course Projects

- **Question Answering on knowledge graphs using DDQN** *RL Course [2023]*
 - Built an RL-based agent that can answer complex multi-hop questions over a knowledge graph.
 - Used the Doubled DQN algorithm to train the agent to learn to predict a sequence of actions to navigate the knowledge graph to find the correct answer.
- **Stock Prediction using sentiment analysis of social media** *Social Networks Course [2022]*
 - Created a social indicator (using sentiment analysis and social network analysis) and combined it with other price indicators in the stock market to predict the price of stocks in a 24hr, 48hr time-slot.
- **Developed ML classifiers for EEG data analysis** *Machine Learning Course [2022]*
 - Implemented machine learning algorithms to develop classifiers for Electroencephalography (EEG) data. They also Assessed the performance of different classifiers to determine the most effective approach for EEG data classification.
- **Function Approximation Based Control specialized for Prosthetic Legs** *Advanced Robotics Course [2020]*
 - Built a hybrid controller for n-DOF robot and applied the controller for different uncertain models.

Honors

Ranked 16th in the national PhD entrance exam for Iranian universities (2024)
 Ranked within the top 0.1% in the national master entrance exam for Iranian universities (2021)
 Ranked within the top 0.4% in the nationwide B.Sc. entrance exam (2016)

Selected Courses

NLP (Grad)	19.7/20 (4/4)	Data Analysis (Grad)	18.9/20 (4/4)
Advanced Algorithms (Grad)	18.7/20 (4/4)	Statistical Inference (Grad)	17.5/20 (4/4)
Algorithm Designs	20/20 (4/4)	Computer Architecture	19.2/20 (4/4)

Skills

Programming/Scripting: Python, C/C++, R, MATLAB, SQL/NoSQL, \LaTeX
NLP/Data Tools: Pandas, Scikit-learn, NLTK, SpaCy, HF Transformers, TensorFlow, PyTorch
IDEs/Development Tools: Git, Docker, Jupyter Notebook, AWS
Soft Skills: Team Work, Problem-Solving, Time Management

Language Skills

English: Fluent - TOEFL: 104 (Listening: 29, Reading: 27, Speaking: 25, Writing: 23)
 Persian: Native

References available upon request.